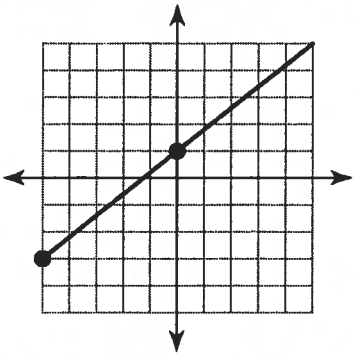
Math 10D Name_____

Unit 1: Systems of Linear Equations Problem Set

Date_____

Find the slope of each line.

1)



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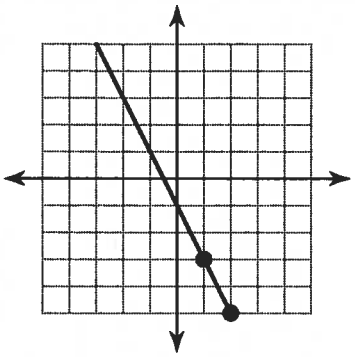


Find the slope of the line through each pair of points.

3) (12, 10), (19, –1)

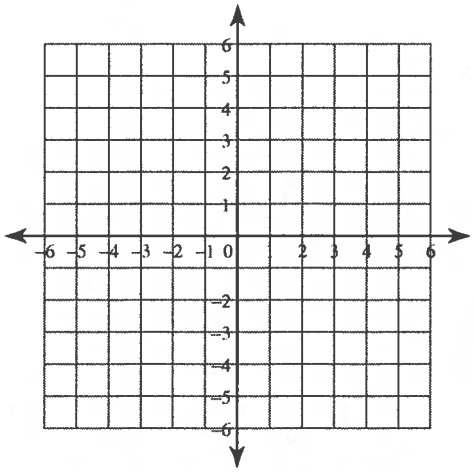
4) (–7, –16), (–16, –4)

5) (15, 20), (15, –20)

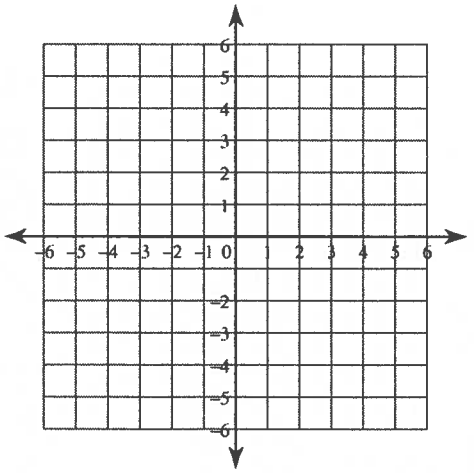
6) (19, 6), (–2, –6)

Sketch the graph of each line.

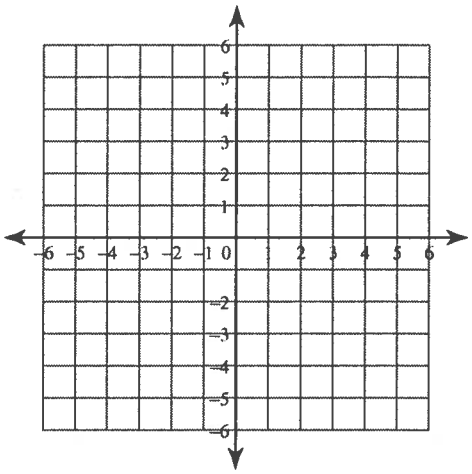
7) x-intercept = –1, y-intercept = 4



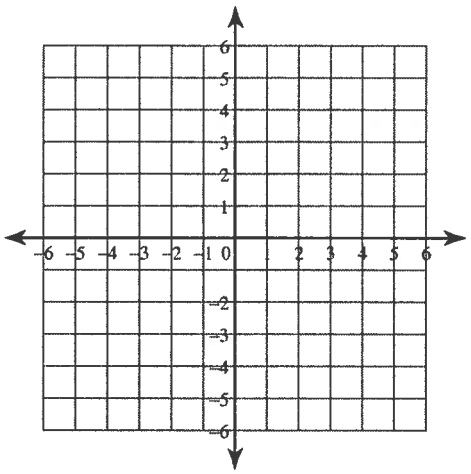
8) x-intercept = 2, y-intercept = –5



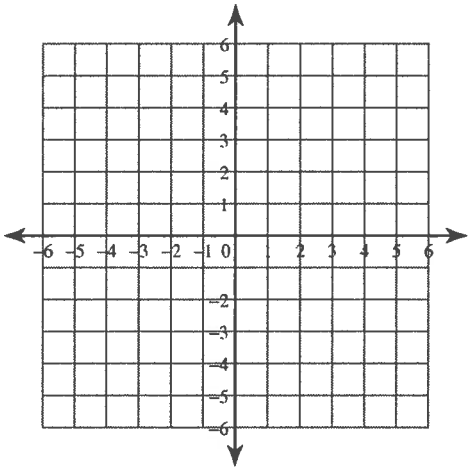
9) $x = -5$



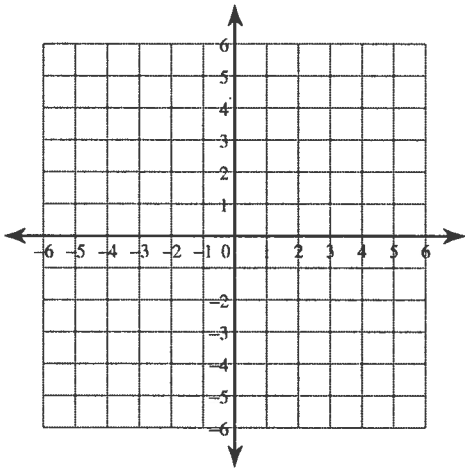
10) $y = -\frac{1}{5}x + 3$



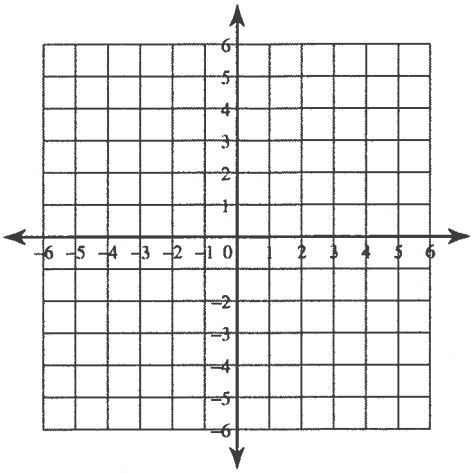
11) $y = \frac{1}{2}x - 3$



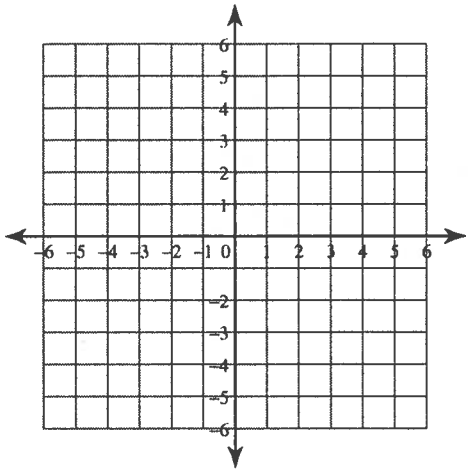
12) $y = -5$



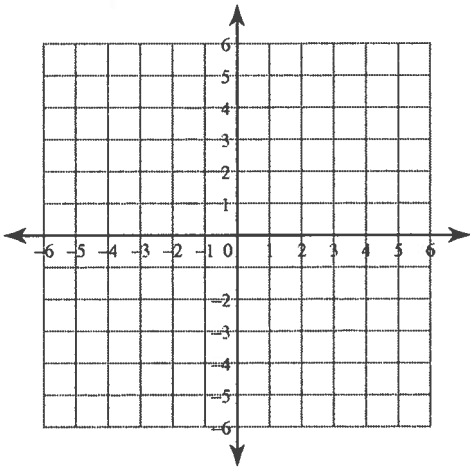
13) $5x - y = -5$



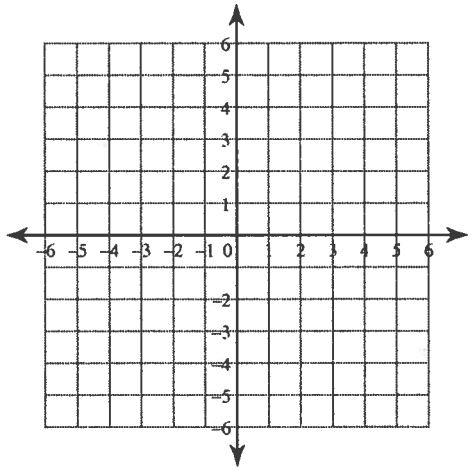
14) $x - 2y = -8$



15) $2x + y = -2$



16) $2x + 5y = -15$



Solve each equation.

17) $\frac{x}{9} = 6$

18) $-5 = 11 + n$

19) $19 - r = 19$

20) $13 = m + 1$

21) $7 - x = 11$

22) $-14n = 238$

23) $\frac{v}{7} - 7 = -5$

24) $10 = \frac{b}{12} + 9$

25) $36 = -7r + 8$

26) $3 = \frac{2 + x}{6}$

27) $-8 - 10a = 172$

28) $8 - 4k = -36$

29) $-3p + 7 = 34$

30) $196 = 7(x + 8)$

31) $-28 = 7(n - 3)$

32) $-1 + \frac{m}{5} = 3$

33) $-25 = -(7 - 6x)$

34) $32 = 2(4 - 8r) - 8r$

35) $20 - 6n = -4(7n - 5) - 8n$

36) $7a - 7 = -7(-2a + 4)$

37) $7(x - 2) = -3 + 3(x + 7)$

38) $6(8 - 4v) = -5(v - 2)$

39) $11 - 6n = -6(n + 6)$

40) $-6x + 6x = -4(x + 7) - 3(x - 7)$

Solve each equation: Leave Answer as a Fraction

41) $\frac{10}{3}\left(-7k + \frac{1}{4}\right) = \frac{11}{2}$

42) $\frac{1264}{189} = -\frac{4}{3}\left(-\frac{10}{3}m - \frac{4}{7}\right)$

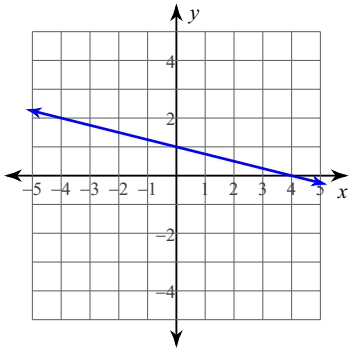
Writing Linear Equations

Name_____

Date_____

Write the slope-intercept form of the equation of each line.

1)



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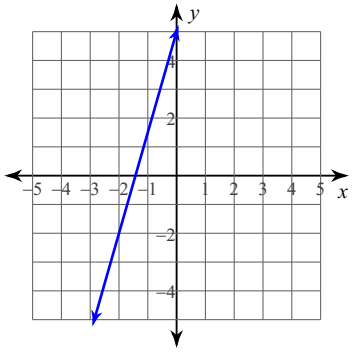
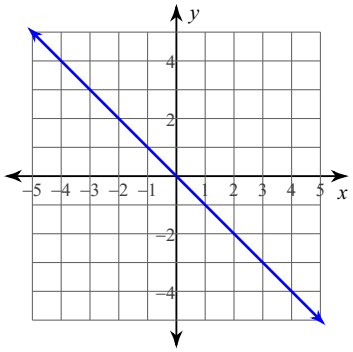
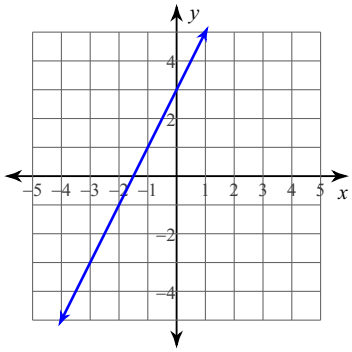


3)



4)



Write the slope-intercept form of the equation of the line through the given point with the given slope.

5) through: $(4, -4)$, slope = -9

6) through: $(4, -2)$, slope = $-\frac{7}{4}$

7) through: $(-2, -3)$, slope = 1

8) through: $(-1, 5)$, slope = –3

Write the slope-intercept form of the equation of the line through the given points.

9) through: $(0, -3)$ and $(3, -1)$

10) through: $(0, -2)$ and $(3, -3)$

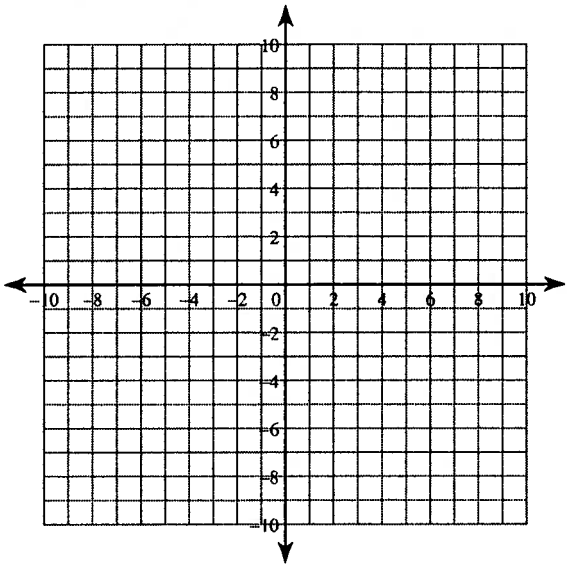
11) through: $(-3, -2)$ and $(2, 1)$

12) through: $(-3, 0)$ and $(0, -2)$

Solve each system by graphing.

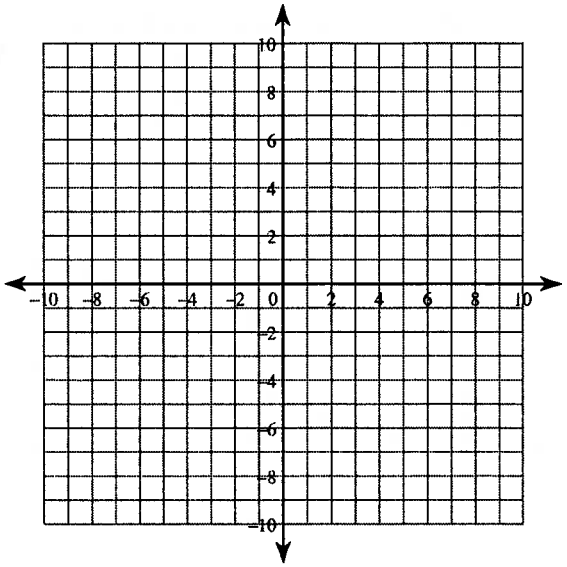
43) $y = -\frac{12}{7}x + 3$

$y = -\frac{2}{7}x - 7$



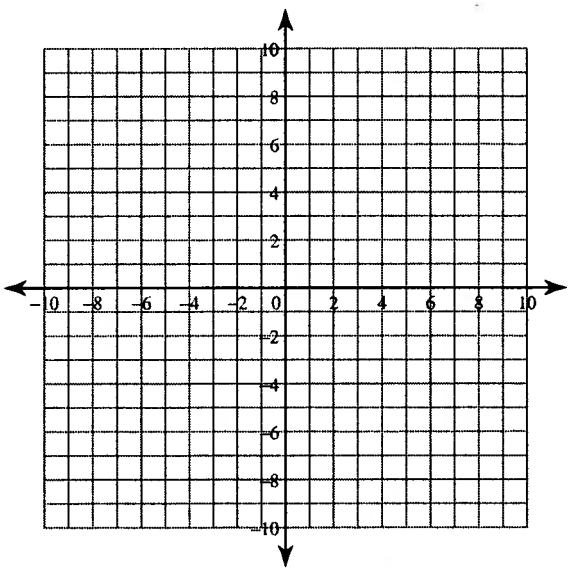
44) $y = -\frac{11}{3}x - 9$

$y = 2x + 8$



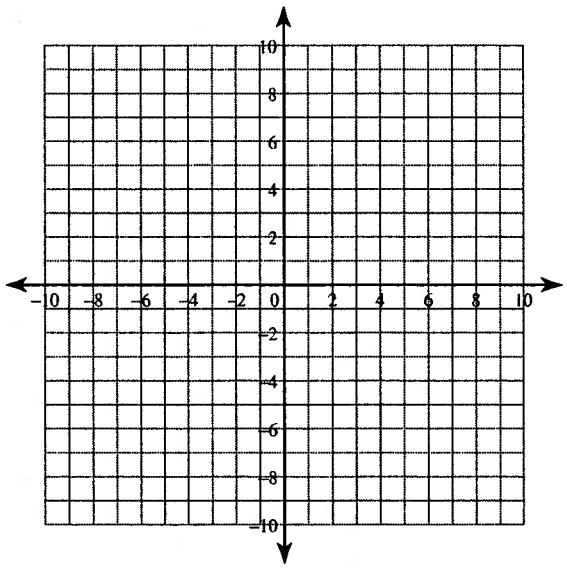
45) $y = -5x - 4$

$y = \frac{3}{2}x + 9$



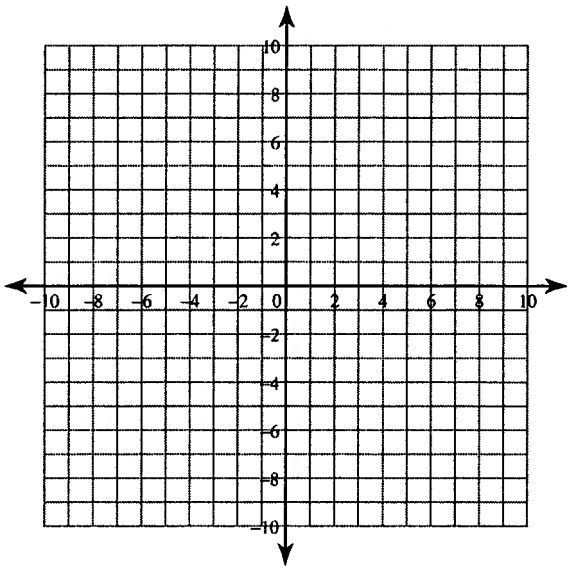
46) $y = -\frac{13}{7}x - 4$

$y = -\frac{3}{7}x + 6$



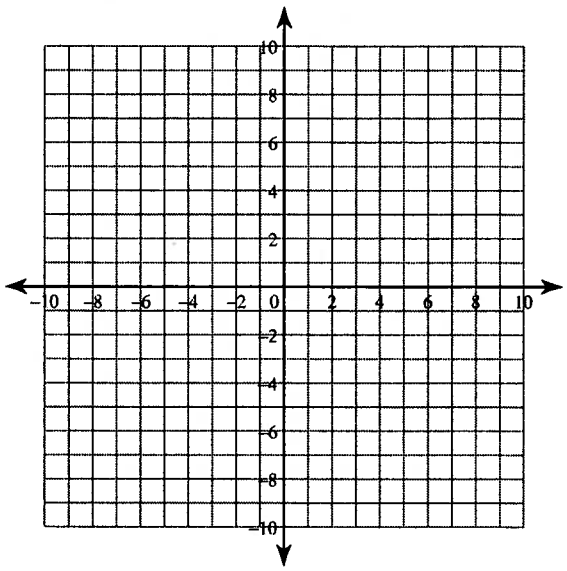
47) $y = -\frac{1}{3}x - 5$

$y = -\frac{11}{6}x + 4$



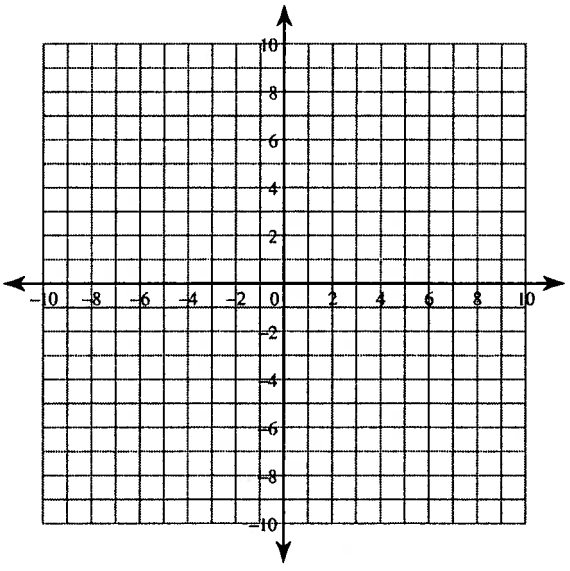
48) $y = -\frac{1}{4}x - 2$

$y = \frac{3}{8}x - 7$



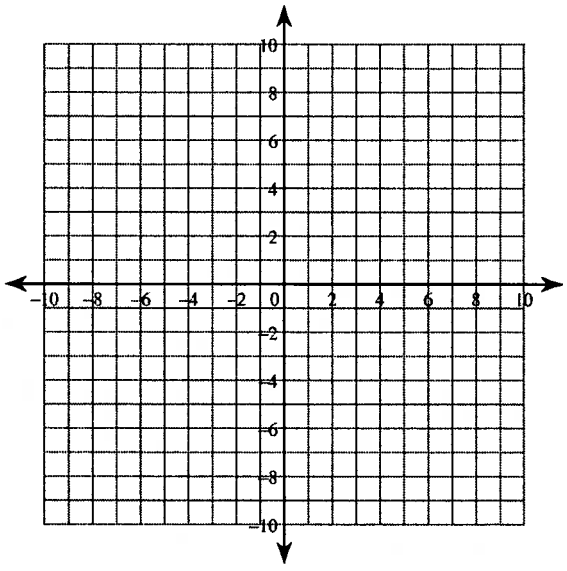
49) $2x + 3y = 18$

$x - 2y = 2$

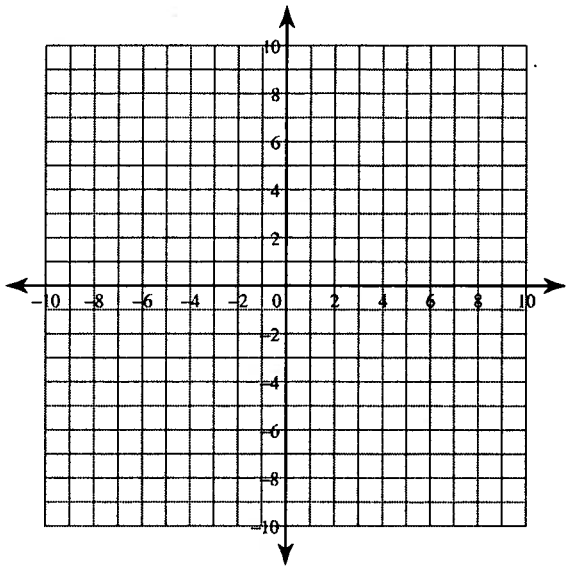


50) $4x - 3y = -21$

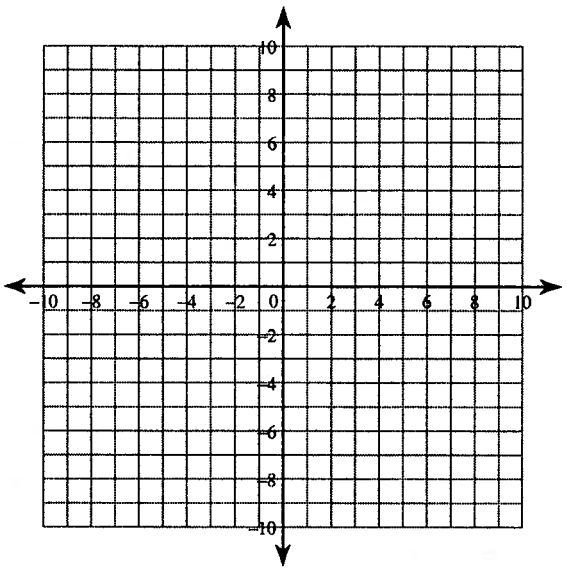
$x + 3y = 6$



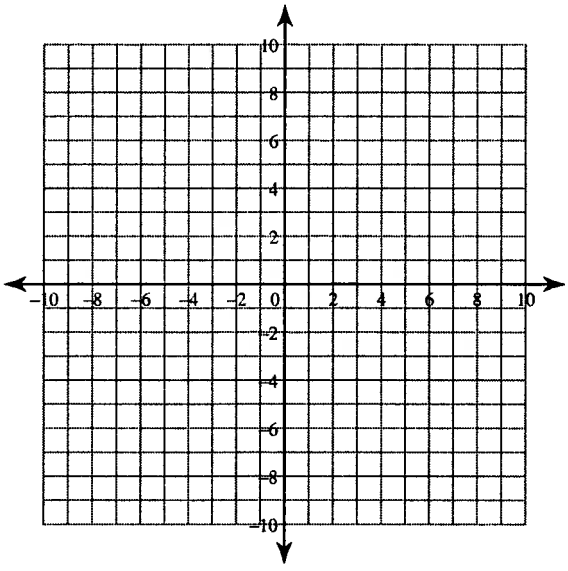
51) $5x + 2y = 2$
$x + 2y = 10$



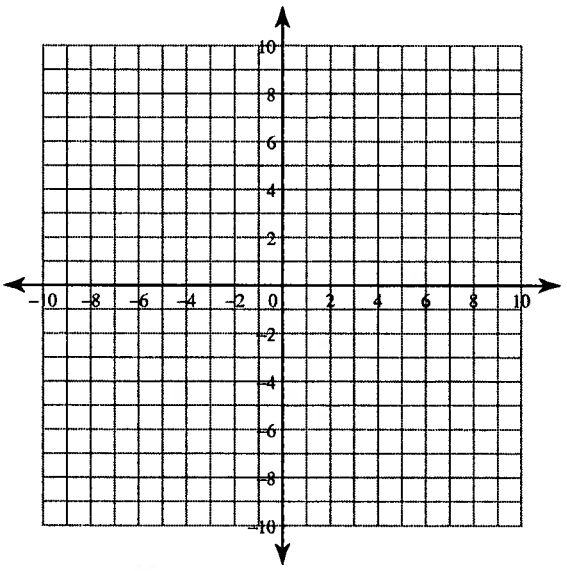
52) $x - 2y = 10$
$15x - 8y = -48$



53) $x + 2y = -10$
$4x + y = 2$



54) $4x + 7y = 7$
$4x + 7y = 49$



Solve each system by substitution.

57) $y = -8x - 34$
$y = -2x - 4$

58) $y = 16x + 18$
$y = -7x + 18$

59) $y = x - 11$
$y = 9$

60) $y = -10x - 14$
$y = -19x - 41$

61) $y = 7x - 9$
$-14x + 9y = 17$

62) $y = 20x - 43$
$20x - y = 43$

63) $y = -2x - 5$
$7x - 3y = 54$

64) $-3x - 9y = -21$
$y = -6x - 26$

65) $-8x - 10y = -34$
$x + 10y = -22$

66) $x + 2y = -1$
$-9x + 3y = 51$

67) $x - 15y = 56$
$13x - 16y = 12$

68) $x + y = -5$
$-3x - 3y = 7$

69) $7x + 10y = 38$
$-15x + 10y = -50$

70) $10x - 7y = -33$
$5x - 5y = 0$

Solve each system by elimination.

71) $-7x + 3y = 1$
$7x + 6y = -19$

72) $-10x + 7y = -14$
$5x - 7y = -21$

73) $-8x - 5y = 9$
$10x + 5y = -5$

74) $-2x = -y + 2$
$-3y = -18x - 42$

75) $5x - 3y = -5$
$5x - 4y = -5$

76) $-2x + 5y = -12$
$-2x + 4y = -12$

77) $10x - 8y = -30$
$6x - 8y = -18$

78) $0 = -2y - 28 - 8x$
$-12 - 2x = -2y$

79) $15x - 2y = -4$
$-5x + 10y = 20$

80) $-6x - 4y = 10$
$-18x - 12y = 30$

81) $8x - 6y = 14$
$x - 5y = 6$

82) $7x - 3y = -1$
$6x + 6y = -18$

83) $-4x - 9y = 21$
$9x + 2y = -29$

84) $-18x + 30y = -12$
$15x - 25y = -5$

85) $-4x + 3y = -7$
$-3x + 4y = 0$

86) $-10x - 5y = 25$
$-6x - 2y = 12$

Math 10D **Unit 1: Systems of Linear Equations Word Problems** **Name:_____**

Read the instructions and questions carefully. Show your work.

1. Define suitable variables (using the let statement), then create the equation for each situation. **Do not solve.**

a) Caroline has a day job and an evening job. She works a total of 40 hours every week.

b) Caroline earns $15/h at her day job and $11/h at her evening job. Last week she earned $540.

c) Justin earns $500/week plus 6% commission selling cars.

d) Justin is offered a new job that would pay $800/week plus 4% commission.

e) A piggy bank contains $5.25 in nickels and dimes.

2. Using the graph to the right, estimate:

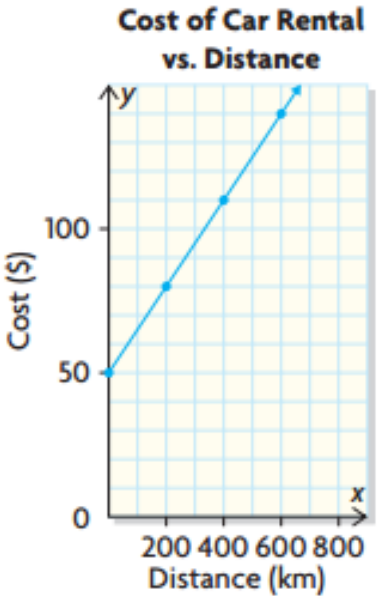
a) What is the rental cost to drive 500 km?

b) How far can you drive for:

i) $80 ii) $100?

3. a) Write an equation for the line. Careful with the scale.

b) Use the equation to answer 2a) and 2b)i).



4. A paving company charges $10 per square food to install interlocking paving stones, as well as a $40 delivery fee.
a) Determine the greatest are that Andrew can pave for $3500.

b) Andrew needs to include 5 cubic yards of sand, costing $15 per cubic yard, to the total cost of the project. How much will this added cost reduce the area that he can pave with his $3500 budget?

5. At Jessica's Java, a new blend of coffee is featured each week. This week, Jessica is creating a low-caffeine espresso blend from Brazilian and Ethiopian beans. She wants to make 200 kg of this blend and sell it for $15/kg. On their own, the Brazilian beans sell for $12/kg, and the Ethiopian beans sell for $17/kg. How many kilograms of each kind of bean must Jessica use to make 200 kg of her new blend of the week?

6. Joanna is considering two job offers. Phoenix Fashions offers $1500/month plus 2.5% commission. Styles by Rebecca offers $1250/month plus 5.5% commission.

a) Create a linear system by writing an equation for each salary.

b) What value of sales would result in the same total salary for both jobs?

c) Which job should Joanna take? Explain your answer.

7. Willow bought 3m of denim fabric and 5m of cotton fabric. The total bill, excluding tax, was $22. Jared bought 6m of denim fabric and 2m of cotton fabric at the same store for $28.

a) Write an equation for each person, then solve to find the price of demin fabric and cotton fabric.

b) How much will 8m of denim fabric and 5 m of cotton fabric cost?

8. The drama department of a school sold 679 tickets to the school play, for a total of $3370. Students paid $4 for a tickets, and non-students paid $7. How many students and non-students attended the play?

9. To raise money for a local shelter, some Grade 10 students held a car wash and charged $6 for cars and $8 for vans. They washed 53 total vehicles and raised $382. How many cars and how many vans did they wash?

10. Tom pays a one-time registration charge and regular monthly fees to belong to a fitness club. After four months, he had paid $420. After nine months, he had paid $795. Determine the registration charge and the monthly fee.

11. A health-food company packs almond butter in jars. Some jars hold 250g. Other jars hold 500g. On Tuesday, the company packed 186.5 kg of almond butter in 511 jars. How many of each size did they pack?

12. Wayne wants to use a few pieces of silver to make a bracelet. Some of the jewellery is 80% silver, and the rest is 66% silver. Wayne needs 30g of 70% silver for the bracelet. How much of each silver should he use?

13. The sum of two numbers is 33, and their difference is 57. What are the two numbers?

14. As the owner of a banquet hall, you are in charge of catering a reception. You are serving two dinners: a chicken dinner that costs $20 and a fish dinner that costs $18. Two hundred guests have ordered their dinners in advance, and the total bill is $3880. Set up a system of linear equations, then solve it to determine how many of each type of dinner was ordered.

15. When a welder works for 3 h and an apprentice works for 5 h, they earn a total of $175. When the welder works for 7 h and the apprentice works for 8 h, they earn a total of $346. Determine the hourly rate of each worker.

16. Ralph needs 500g of chocolate that is 86% cocoa for a truffle recipe. He has one kind of chocolate that is 99% cocoa and another kind that is 70% cocoa. How much of each kind does Ralph need to make the 86% cocoa blend? Round your answer to the nearest gram.